

1

5

10

a

15

cu

20

25

a ~~7/8~~.

30

35

1 ~~9~~ 10. A bottle cap as recited in claim ~~8~~ comprising a plurality of grooves formed on the inner surface of the top portion.

5 Sub 57 11. A bottle cap as recited in claim 10 comprising:  
a first set of parallel spaced apart grooves; and  
a second set of parallel spaced apart grooves, wherein grooves of the first set intersect grooves of the second set.

10 12. A bottle cap as recited in claim 10 further comprising a liner fitted over the top portion inner surface, the liner having an opening formed through its thickness.

~~12~~ 13. A bottle cap as recited in claim ~~8~~ wherein the top portion is hingedly coupled to the annular wall.

15 ~~13~~ 14. A bottle cap as recited in claim ~~8~~ further comprising a moveable spout extending from the top portion.

20 Sub 67 15. A vented bottle cap system comprising:  
a bottle having a neck having a rim defining a mouth and threads formed on the neck outer surface;  
a cap having a top portion having an inner surface and an annular wall extending from the top portion, the annular wall having threads formed on its inner surface for threading onto the threads formed on the bottle neck, wherein when the cap is threaded onto the bottle neck a gas path is formed between outer surface of the bottle neck and the inner surface of the of the annular wall;  
25 a circular ridge formed on the inner surface of the top portion; and  
a slot formed across the ridge, wherein when the cap is threaded onto the bottle neck, the ridge sits on the bottle neck rim and the slot forms a pathway for gas generated in the bottle to escape across the bottle neck rim and through the gas path.

30

35

1 16. A vented bottle cap system as recited in claim 15 comprising:  
a plurality of concentric ridges formed in the inner surface of the top portion,  
wherein when the cap is threaded onto the bottle neck, the plurality of ridges contact the bottle  
neck rim; and

5 at least a slot in each ridge, wherein a slot in each ridge is radially aligned with  
a slot in an adjacent ridge.

10 17. A vented bottle cap system as recited in claim 15 comprising:  
a plurality of concentric ridges formed on the inner surface of the top portion,  
wherein when the cap is threaded onto the bottle neck, the plurality of ridges contact the bottle  
neck rim; and

at least a slot across each ridge, wherein a slot in each ridge is circumferentially  
spaced apart from a slot in an adjacent ridge.

15 17/18. A vented bottle cap system as recited in claim 14/15 further comprising a liner fitted  
in the cap and having a hole through its thickness, wherein when the cap is threaded onto the  
bottle neck, the liner sits on the bottle neck rim and wherein gases generated in the bottle escape  
through the hole, through the slot and through the <sup>pathway</sup> ~~gas path~~.

20 18/19. A vented bottle cap system comprising:  
a bottle having a neck having a rim defining a mouth and threads formed on the  
neck outer surface;

25 a cap having a top portion having an inner surface and an annular wall extending  
from the top portion, the annular wall having threads formed on its inner surface for threading  
onto the threads formed on the bottle neck, wherein when the cap is threaded onto the bottle neck  
a gas path is formed between outer surface of the bottle neck and the inner surface of the annular  
wall; and

30 a groove formed on the inner surface of the top portion wherein when the cap is  
threaded onto the bottle neck, the groove extends <sup>outwardly</sup> ~~radially~~ <sup>two locations</sup> ~~beyond~~ <sup>beyond two locations of</sup>  
providing a pathway for gas generated in the bottle to escape across the bottle neck mouth and  
through the gas path.

35 19/20. A vented bottle cap system as recited in claim 18/19 comprising a plurality of  
grooves formed on the inner surface of the top portion, wherein each groove extends radially  
beyond the rim of the bottle neck when the cap is threaded onto the bottle neck.

1 <sup>20</sup>~~21~~. A vented bottle cap system as recited in claim <sup>19</sup>~~20~~ comprising a first set of parallel grooves and a second set of parallel grooves formed on the inner surface of the top portion, wherein grooves of the first set intersect grooves of the second set.

5 <sup>21</sup>~~22~~. A vented bottle cap system as recited in claim <sup>18</sup>~~19~~ further comprising a liner fitted in the cap and having a hole through its thickness, wherein when the cap is threaded onto the bottle neck, the liner sits on the bottle neck rim and wherein gases generated in the bottle escape through the hole, through the groove and through the gas path.

10 <sup>Sub a)</sup> ~~23~~. A method for venting gases generated in a bottle having a rim defining a mouth and containing a liquid, the method comprising the steps of:  
providing a cap having a top portion, a circular ridge formed on an inner surface of the top portion and a slot formed across the ridge; and  
torquing the cap on the bottle causing the ridge to sit on the rim, wherein the slot provides a pathway for the venting of gases.

15 24. A method as recited in claim 23 further comprising the steps of:  
forcing liquid in the slot; and  
solidifying the liquid to block the pathway through the slot.

20 25. A method for venting gases generated in a bottle having a rim defining a mouth and containing a liquid the method comprising the steps:  
providing a cap having a top portion and a groove formed on an inner surface of the top portion; and  
torquing the cap on the bottle causing the inner surface of the top portion to sit on the rim, wherein the groove provides a pathway for the venting of gases.

25 <sup>25</sup>~~26~~. A method as recited in claim <sup>24</sup>~~25~~ further comprising the steps of:  
forcing liquid in the groove; and  
solidifying the liquid to block the pathway through the groove.

35

1 ~~26~~ ~~27~~. A vented bottle cap system comprising:  
a bottle having a neck having a rim defining a mouth and threads formed on the neck outer surface;

5 a cap having a top portion having an inner surface and an annular wall extending from the top portion, the annular wall having threads formed on its inner surface for threading onto the threads formed on the bottle neck, wherein when the cap is threaded onto the bottle neck a gas path is formed between outer surface of the bottle neck and the inner surface of the annular wall;

10 a disc made of a material being at least semi hard fitted over the top portion inner surface, the disc having a first surface opposite a second surface, wherein the first surface faces the top portion inner surface;

a circular ridge formed on the second surface of the disc; and

15 a slot formed across the ridge, wherein when the cap is threaded onto the bottle neck, the ridge sits on the bottle neck rim and the slot forms a pathway for gas generated in the bottle to escape across the bottle neck rim and through the gas path.

~~27~~ ~~28~~. A vented bottle cap system as recited in claim ~~26~~ ~~27~~ comprising:  
a plurality of concentric ridges formed in the second surface of the disc, wherein when the cap is threaded onto the bottle neck, the plurality of ridges contact the bottle neck rim;  
20 and  
at least a slot in each ridge.

~~28~~ ~~29~~. A vented bottle cap system as recited in claim ~~27~~ ~~28~~ wherein at least a slot in each ridge is radially aligned with a slot in an adjacent ridge.

25 ~~29~~ ~~30~~. A vented bottle cap system as recited in claim ~~26~~ ~~27~~ further comprising a liner fitted in the cap over the disc and having a hole through its thickness, wherein when the cap is threaded onto the bottle neck, the liner is sandwiched between the ridge and the rim and wherein gases generated in the bottle escape through the hole, through the slot and through the gas path.

30 ~~30~~ ~~31~~. A vented bottle cap system as recited in claim ~~26~~ ~~27~~ wherein the disc is made from plastic.

35

Sub 97 32

1

Sub 97 32

A vented bottle cap system comprising:

a bottle having a neck having a rim defining a mouth and having threads formed on the bottle neck outer surface;

5

a cap having a top portion having an inner surface and an annular wall extending from the top portion, the annular wall having threads formed on its inner surface for threading onto the threads formed on the bottle neck outer surface, wherein when the cap is threaded onto the bottle neck a gas path is formed between outer surface of the bottle neck and the inner surface of the annular wall;

10

a disc made of a material being at least semi hard fitted over the top portion inner surface, the disc having a first surface opposite a second surface, wherein the first surface faces the top portion inner surface;

15

a groove formed on the second surface of the disc wherein when the cap is threaded onto the bottle neck, the groove extends radially beyond the rim of the bottle neck providing a pathway for gas generated in the bottle to escape across the bottle neck mouth and through the gas path.

20

33. A vented bottle cap system as recited in claim 32 comprising a plurality of grooves formed on the second surface of the disc, wherein each groove extends radially beyond the rim of the bottle neck when the cap is threaded onto the bottle neck.

25

34. A vented bottle cap system as recited in claim 32 comprising a first set of parallel grooves and a second set of parallel grooves formed on the second surface of the disc, wherein grooves of the first set intersect grooves of the second set.

35. A vented bottle cap system as recited in claim 32 wherein the disc is made from plastic.

30

Sub 97 36

A vented bottle cap system comprising:

a bottle having a neck having a rim defining a mouth and threads formed on the neck outer surface;

35

a cap having a top portion having an inner surface and an annular wall extending from the top portion, the annular wall having threads formed on its inner surface for threading onto the threads formed on the bottle neck outer surface, wherein when the cap is threaded onto the bottle neck a gas path is formed between outer surface of the bottle neck and the inner surface of the annular wall;

1 a disc made from a material being at least semi hard fitted over the top portion  
inner surface, the disc having a circumferential edge and a first surface opposite a second  
surface, wherein the first surface faces the top portion inner surface;

a gap between the annular wall and the circumferential edge;

5 an opening formed through the thickness of the disc, the opening located within  
the bottle mouth when the cap is threaded onto the bottle neck;

a circular ridge formed on the first surface of the disc; and

10 a slot formed across the ridge, wherein when the cap is threaded onto the bottle  
neck, the ridge is located over the bottle neck rim and the opening and slot form a pathway for  
gas generated in the bottle to escape across the bottle neck and through the gas path.

37. A bottle cap liner disc for use with cap for capping a bottle having a rim defining  
a bottle mouth and having an inner and an outer diameter, the disc allowing for the venting of  
gases generated in a bottle when the cap is threaded on the bottle, the disc comprising:

15 a first surface opposite a second surface;

a circular ridge formed on the first surface of the disc; and

a slot formed across the ridge.

38. A disc as recited in claim 37 wherein the ridge has a diameter not greater than the  
20 outer diameter of the rim and not less than the inner diameter of the rim.

39. A disc as recited in claim 37 wherein the disc has a thickness, the disc further  
comprising an opening formed through its thickness.

25 40. A disc as recited in claim 37 made from a material being at least semi-hard.

add a<sup>10</sup>